



Mesotrione Soil Persistence in USA and Carryover Risk of LUMAX in 2004

Derek Cornes

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SYN01896316

GRNVL0000021414

Mesotrione Carryover Update

- Review of model predictions
- Results of commercial Lumax soil sample analysis and model fit
- Copper vs acid latest data
- Conclusions and risk analysis



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What Have We Tried to Predict?

- 1. Predictions of residue occurrence
 - Estimates the amounts and regions more likely to have residues present in the following spring
- 2. Prediction of following crop injury
 - Estimates whether crop injury will be expressed at those amounts and in those regions (crop and soil type considerations)

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Driving Factors for Residues

- Low Rainfall
- Low pH
- High Organic Matter
- Sandy Soils



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Injury Expression

- Concentrations above 9 ppb may start showing injury in sensitive soybeans (15% of varieties).
- This depends on the availability of mesotrione in the soil
- Relationships still under investigation
- Factors reducing injury expression
 - High CEC, Increasing organic matter

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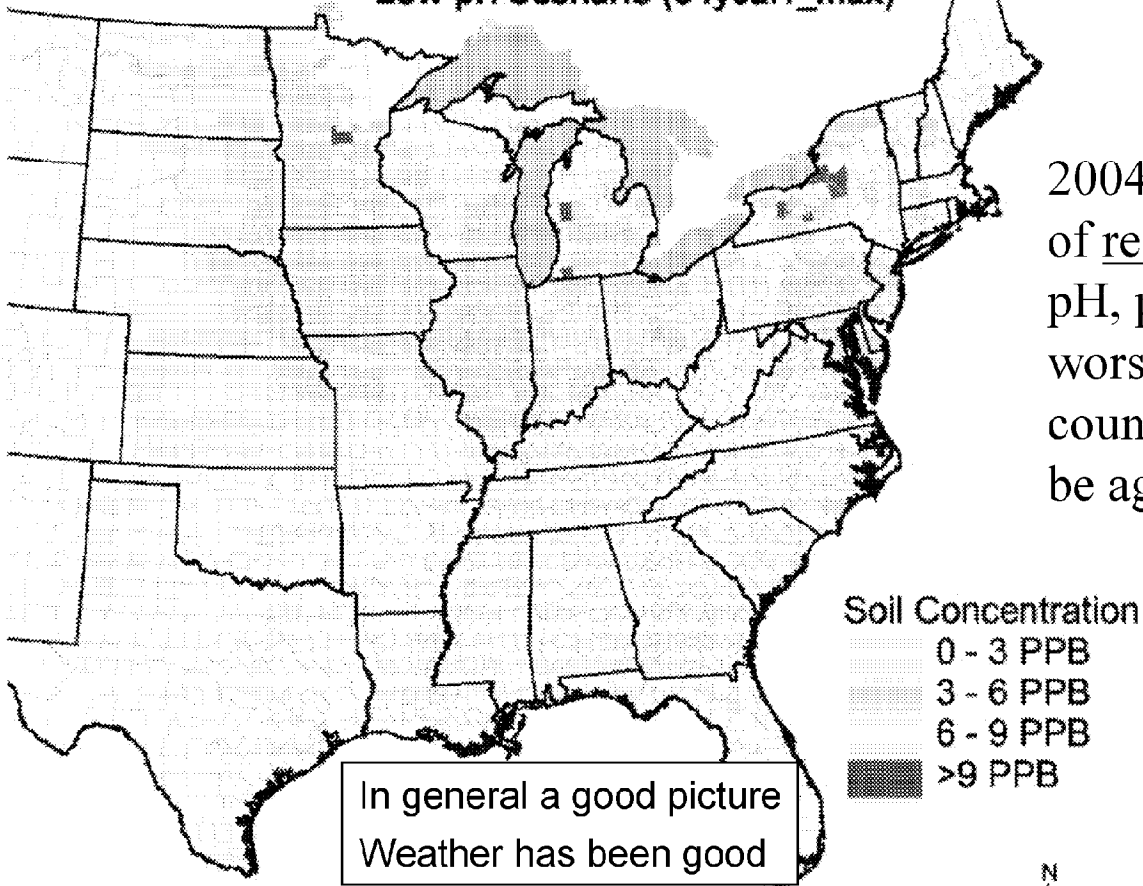
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Maximum Mesotrione Concentration

Low pH Scenario (o4y3a1_max)

2004 prediction
of residues Low
pH, pre app,
worst case soil in
county. May not
be agricultural.



Soybean Plant Day, 2004 (o4y3)
Concentration 0-6 inches
Application 225 g/ha (A)
25th Percentile Future Weather Data (1)

200 0 200 400 Miles



Based on
meso acid

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Comercial Sampling

- 130 sites sampled in fall 2003 which had been commercially treated with Lumax during 2003
- Targeted mainly higher risk areas
- Designed to confirm model



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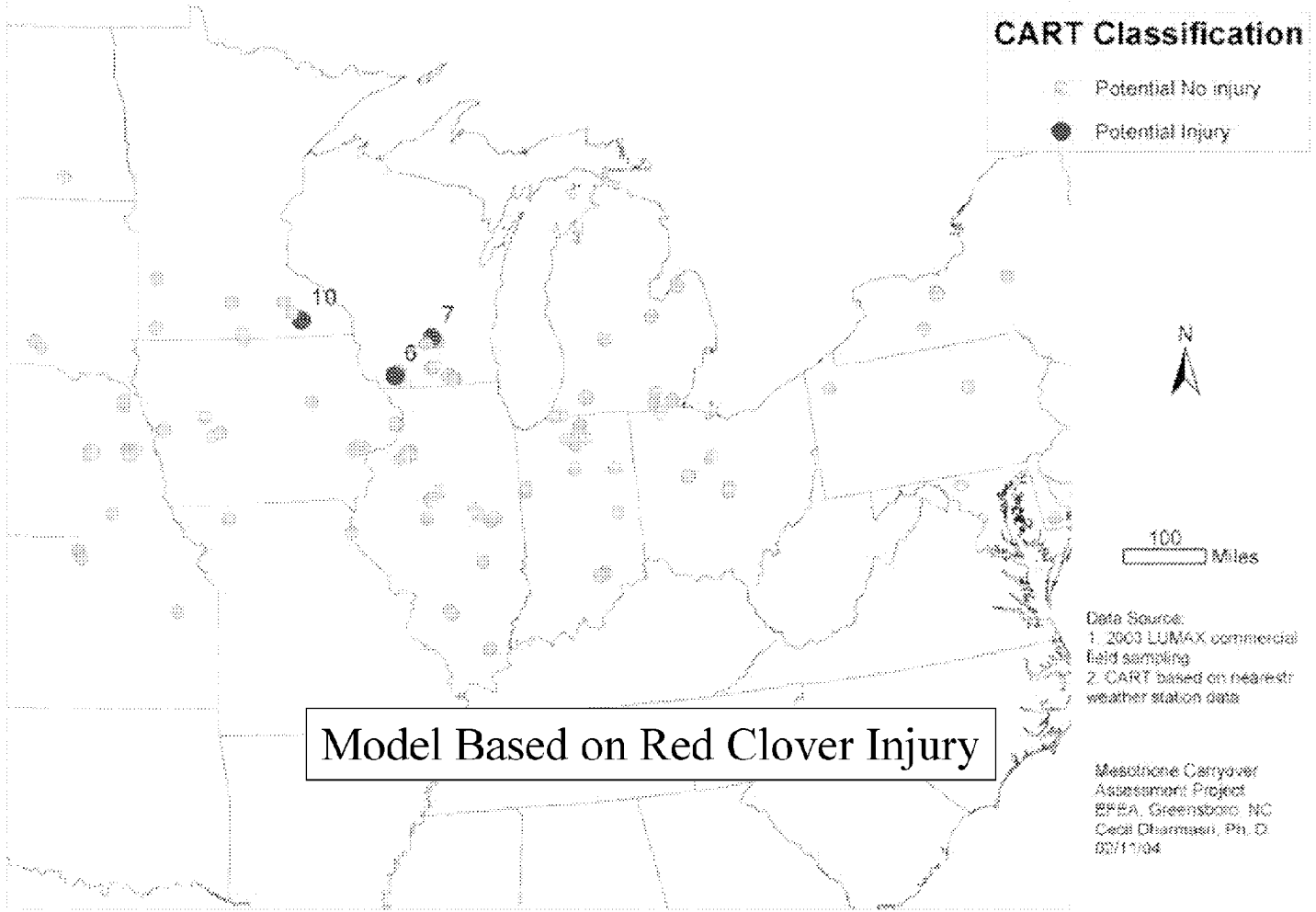
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CART Model Validation with 2003 LUMAX Commercial Sampling

Note: The predicted potential injury sites are labeled with the residue (ppb)

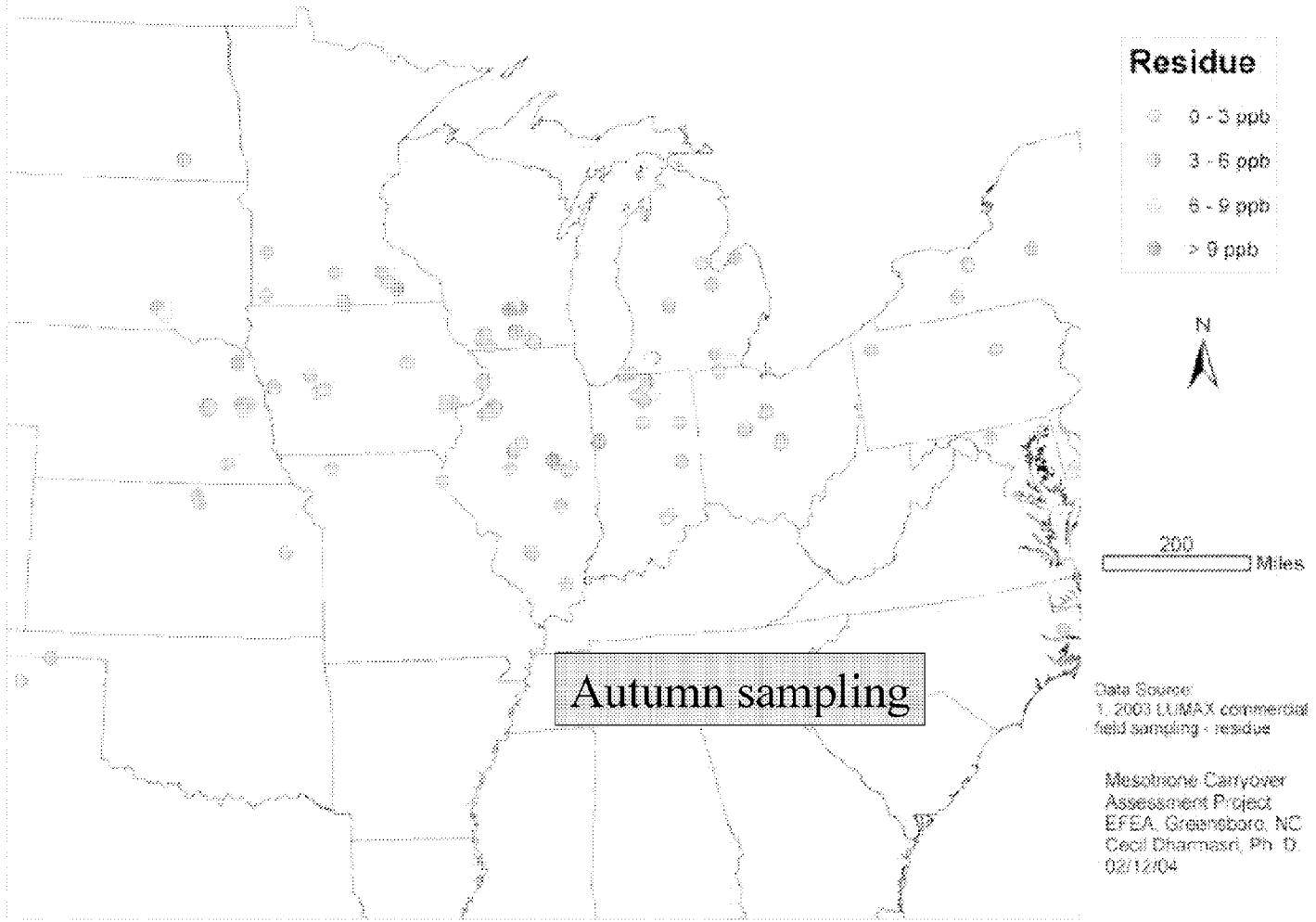


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Distribution of Sampling Locations and Residue in Surface Soil (ppb)



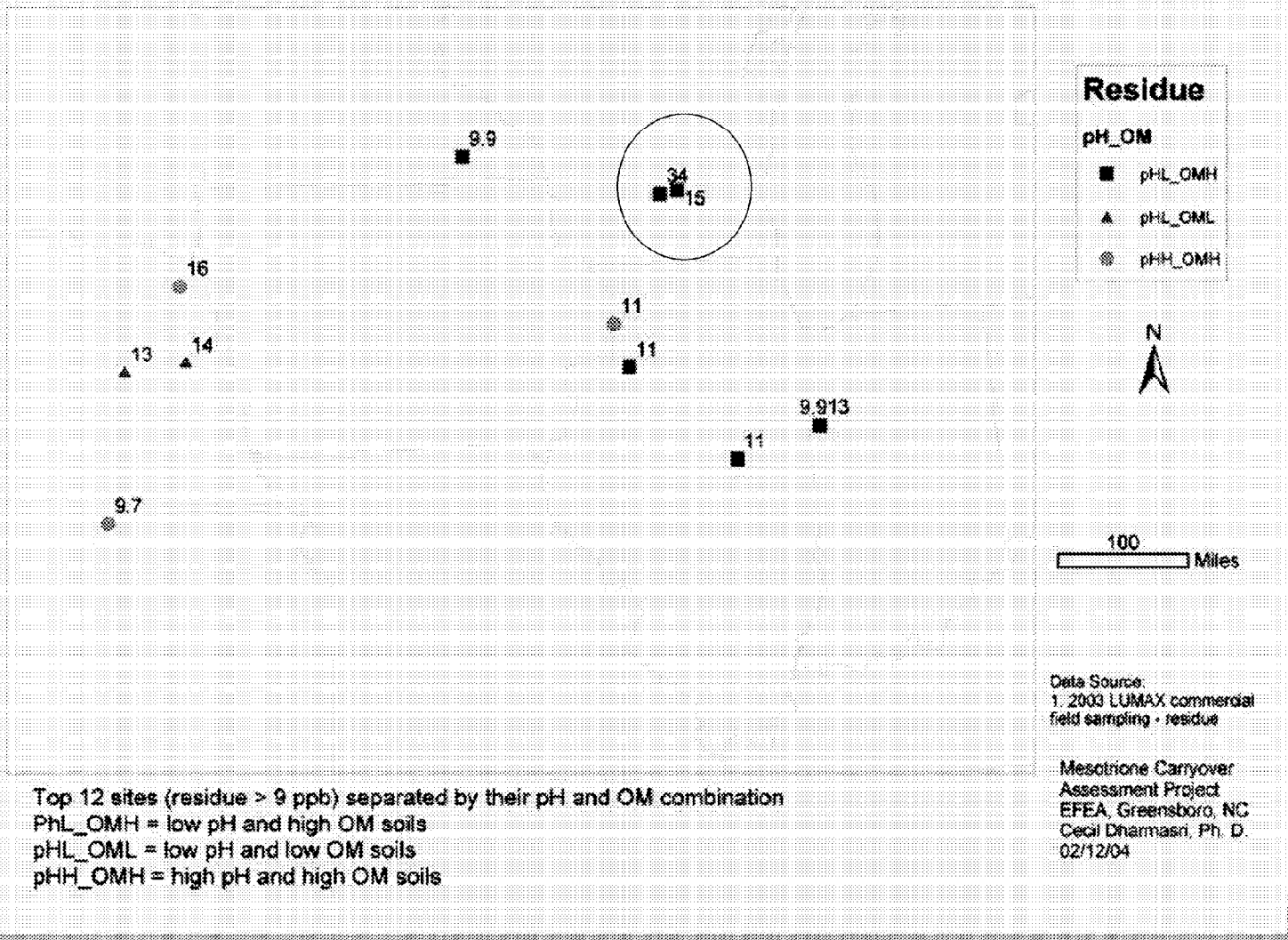
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Distribution of 12 sites with highest Residue in Surface Soil (ppb)



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Soil Sampling Matrix (Actual)

pH	OM	# Sites sampled	Potential Risk	# sites with residue > 9 ppb	% injury sites
Low	High	49	High	7	14
Low	Low	17	medium	2	12
High	High	54	low	3	6
High	Low	11	Very low	0	0

Model giving good but not perfect fit

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Sampling Summary

- Fall samples gave >9 ppb in 10% of cases (skewed to high risk sites)
 - composite samples may dilute hot spots (overlaps and soil type pockets)
- Some further degradation likely in at least 50% of sites (especially in South)
- Some soils may not allow injury expression
- Given 15% of soybeans are sensitive varieties
- Injury potential around 1% or less of treated area (as predicted)
- Highest risk area in Wisconsin

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Hickory Grove 2

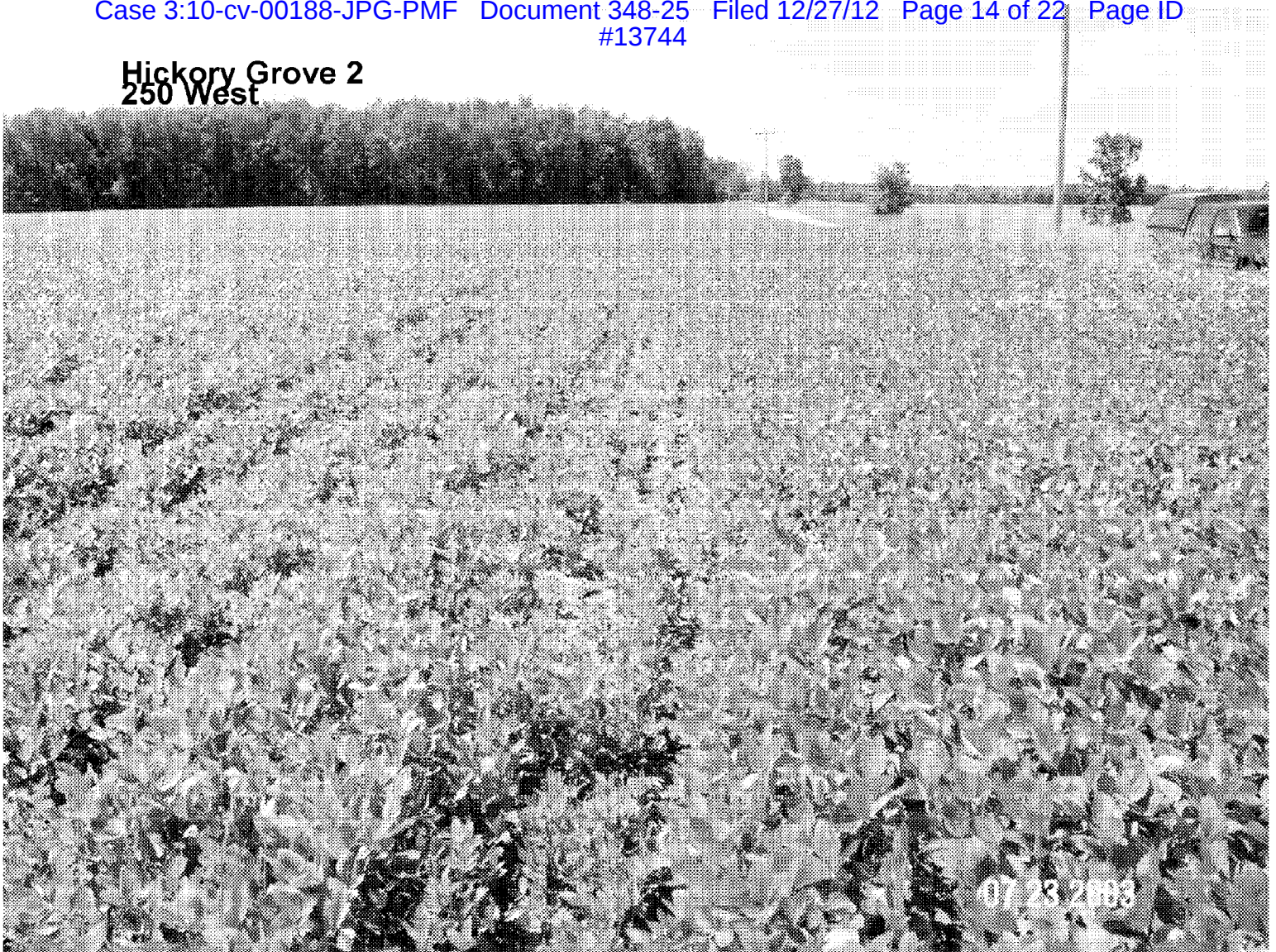


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Hickory Grove 2
250 West



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Hickory Grove 1



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What Next?

- In general risk in 2003-4 season looks low
 - 1% or less of treated acres (as predicted at last DeCo)
- Worst case from modelling and sampling is Wisconsin
- PLT decision in February
 - Look at Wisconsin in more detail
 - If this shows low risk (<1%) then no action
 - If high risk then look at management with tolerant soybeans

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Wisconsin

- Treated acres = 631,055
- Detailed modelling (by county) including use pattern analysis, predicts damage potential on 5625 acres (0.89%)
- Includes some safety margins
 - Based on red clover injury (2-3X safety margin)
 - Based on average weather conditions (2003 weather more favourable)
 - Gives room for overlaps and any increased persistence from the copper salt
- Conclusion
 - Some damage expected but not enough to be pre-emptive and announce to the market
 - No management measures justified

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Mesotrione Acid vs Copper Salt

Recap from last DeCo

- The mesotrione copper salt can result in higher residues than the acid
- Modelling (based on acid) underestimates residues
- Residues from Lumax application can be (exception rather than the rule) around 2-3x expected from a comparable acid application (when very dry)

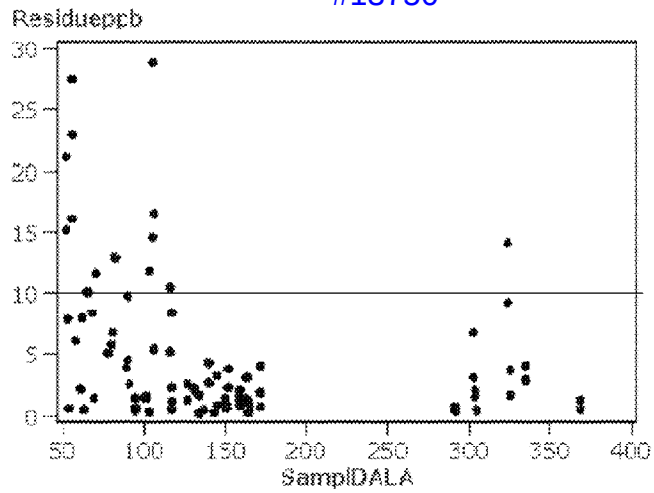
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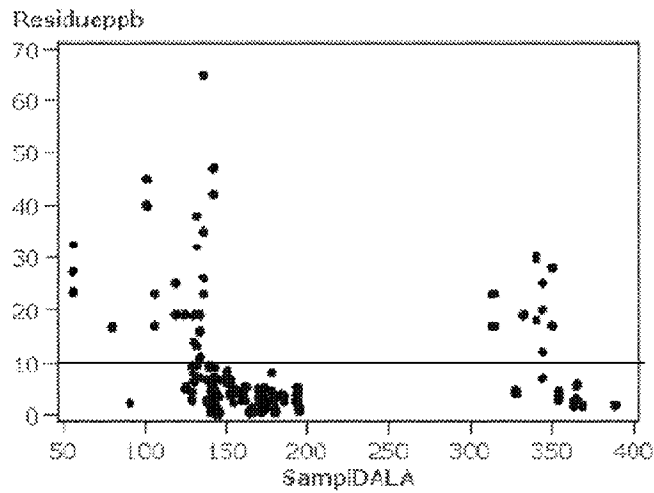
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MesoForm=Acid



Dry season 2002-3

MesoForm=Cu-hydroxide chelate



Not directly
comparable sites

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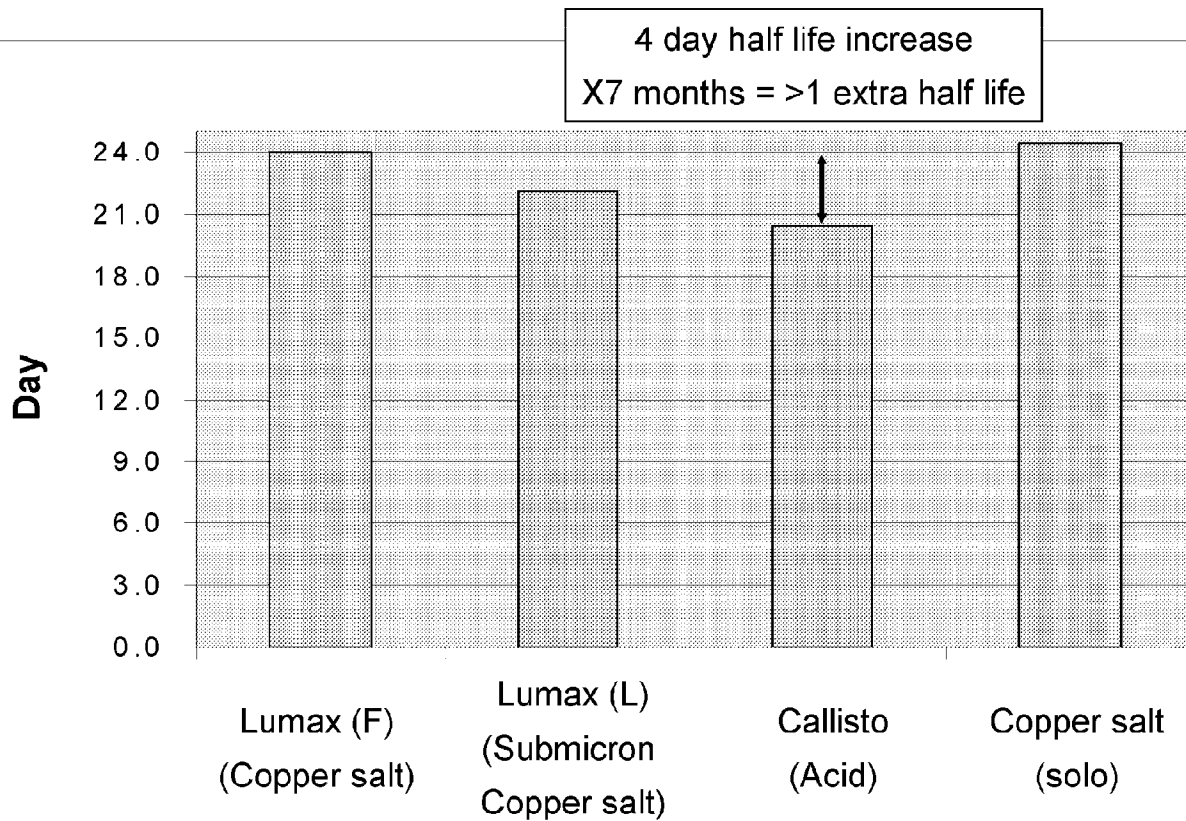
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Mesotrione Formulations

Half lives (DAT 0-90)



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2004-5 Season

- There will probably be some carryover hits in soybeans in 2004, but this is predicted to be less than 1% of treated area
- Given the low risk, PLT decision that it will be better to manage any complaints than pro-actively announce what might be a non-issue to the market
- Lumax submicron (introduced 2004) will reduce future risk
- Still need to get to mesotrione acid for lowest risk

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